

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 18 OCT 2005

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Applicant's or agent's file reference PU030222	FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/US2004/023163	International filing date (day/month/year) 21.07.2004	Priority date (day/month/year) 22.07.2003
International Patent Classification (IPC) or national classification and IPC H04L12/28		
Applicant THOMSON LICENSING S.A. et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ sent to the applicant and to the International Bureau a total of 9 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 29.03.2005	Date of completion of this report 17.10.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Wolf, W Telephone No. +49 89 2399-7930 

**INTERNATIONAL PRELIMINARY REPORT
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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-10 as originally filed

Claims, Numbers

1-21 received on 31.03.2005 with letter of 28.03.2005

Drawings, Sheets

1/4-4/4 received on 31.03.2005 with letter of 28.03.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-21
	No: Claims	
Inventive step (IS)	Yes: Claims	1-21
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-21
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

V. Reasoned statement under Rule 66.2(a)(ii) with regards to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

The following documents (D) are mentioned for the first time in this report:

- D1: US 2002/116338 A1 (GONTHIER JEAN-CHARLES ET AL) 22 August 2002
D2: EP-A-1 320 214 (MARKPORT LTD) 18 June 2003 (2003-06-18)
D3: WEI-LING WANG ET AL: "A protocol for billing mobile network access devices operating in foreign networks" PROCEEDINGS - THE WORKSHOP ON ENABLING TECHNOLOGIES: INFRASTRUCTURE FOR COLLABORATIVE ENTERPRISES, IEEE COMPUTER SOCIETY PRESS, LOS ALAMITOS, CA, US, 17 June 1998 (1998-06-17), pages 262-268, XP002145933 ISSN: 1080-1383
D4: EP-A-1 246 445 (NORTEL NETWORKS LTD) 2 October 2002 (2002-10-02)

1. Independent claim 1 meets the requirements of Article 33(2) and 33(3) PCT.

The application relates to the authorisation of access of a user to a network through an access point.

D1, which is the closest prior art, discloses, according to the main features of claim 1, *a method for processing user requests for credit based network access comprising* (see in particular figure 2, step 30, 32):

- *receiving, by an access point, in the network a user request for a user access from a client device according to an authentication protocol* (D1: paragraph 26, lines 1-5, Figure 2, step 30 and paragraph 18 mentioning WLAN)
- *forwarding, by said AP, user credential to an authentication server in response to said user request* (D1: paragraph 26, lines 5-8, Figure 2, step 32)
- *receiving, by said access point, an access response from said authentication server authenticating said user access for said client device, the access response containing parameter having credit value indicative of a length of available continued access of the client device to the network based on remaining user credit* (D1: paragraph 26, last 5 lines and paragraphs 27-30, figure 2, step 36)

The difference between the subject-matter of claim 1 and the disclosure of D1, therefore, lies in the following steps:

- *transmitting, by said AP, a re-authorisation request to said client device in response to said credit parameter value reaching a threshold value to cause a re-authentication of said client device with said network to occur*
- *receiving from said client and forwarding, by said AP, user credentials to said authentication server before granting further access to the network by said client device*

The technical effect of the different is that the management of the user credential occurs in the client device and not in a server in the network as it is the case in D1. The problem solved by claim 1 with regards to D1 is how to reach the technical effect mentioned above.

The solution of claim 1 is not present in D1. Indeed, in D1, there is no transmission of re-authorisation request to said client device. Furthermore, there is no indication that this could be done. Indeed, as indicated by figure 2 of D1, the management of the user credential is only done in the PPS server and the mobile terminal does not take part to it. The mobile terminal is only involved when it will increase his credit by contacting the customer care (see in particular paragraph 46). The same remark applies to D2-D4.

Independent claim 1, therefore, meets the requirements of Article 33(2) and 33(3) PCT.

2. Independent **claim 12** is a repetition of the subject-matter of claim 1 and, hence meets the requirements of Article 33(2) and 33(3) PCT for the same reason.
3. The dependent claims meet the requirements of Article 33(2) and 33(3) for the same reasons as claim 1 and 12.
4. There is a problem of clarity for **claim 17** as to its **category**.

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A claim for an apparatus should contain structural features (e.g. "means for..." or "means arranged in such a way as to...") as opposed to process features (Article 6 PCT).

The formulation "the authentication server **retrieves ... and denies...**" is not considered as defining **structural features** but as defining **functions** (i.e. an activity).

The Applicant should have amended claim 17 in such a way that it is clearly an apparatus claim.

5. Claims shall be numbered consecutively (Rule 6.1(b) PCT). Therefore, the numbering of the claims should be redone.
6. If the Applicant is aware of documents reflecting the **prior art** described in the beginning of the Application, he should have identify these documents in the description according to Rule 5.1(a)(ii) PCT.

To meet the requirements of Rule 5.1(a)(ii) PCT, D1 should also have been identified in the description and the relevant background art disclosed therein should have been briefly discussed.

To meet the requirements of Rule 6.3(b) PCT, the independent claims should have been **properly** cast in the **two-part form**, with those features which in combination are part of the prior art (see D1); being placed in the preamble.

7. **Reference signs** in parentheses should have been inserted in the claims to increase their intelligibility, Rule 6.2(b) PCT. This applies to both the preamble and characterising portion.
8. The vague statement concerning the scope of protection in page 10, lines 20-28 should have been deleted (PCT Guidelines 5.30 and Article 6 PCT).
9. The general statement "**incorporated herein by reference**" in page 1 line 6 is not clear. Therefore, either a short acknowledgement of the relevant subject-matter of the

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corresponding document, to which said statement refers, should in accordance with Article 34(2)(b) PCT, have been added to the description, or, if said document is not relevant for the performance of the invention, such statement should have been deleted.

CLAIMS

1. (AMENDED) A method for processing user requests for credit based network access comprising:

receiving, by an access point (AP) in the network, a user request for user access from a client device according to an authentication protocol;

forwarding, by said AP, user credentials to an authentication server in response to said user request;

receiving, by said AP, an access response from said authentication server authenticating said user access for said client device, the access response containing a parameter having a credit value indicative of a length of available continued access of the client device to the network based on remaining user credit;

transmitting, by said AP, a re-authorization request to said client device in response to said credit parameter value reaching a threshold value to cause a re-authentication of said client device with said network to occur; and

receiving from said client and forwarding, by said AP, user credentials to said authentication server before granting further access to the network by said client device.

2. (ORIGINAL) The method of claim 1, wherein said parameter comprises a session-timeout parameter associated with IEEE 802.1X authentication protocol.

3. (AMENDED) The method of claim 1, further comprising transmitting by said authentication server, a re-authentication response for re-establishing access to said network based on said credit parameter value associated with the client device on said authentication server.

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4. (AMENDED) The method of claim 3, wherein the re-authentication response is based on the results of a comparison of said credit parameter value with said threshold value by said authorization server.

5. (ORIGINAL) The method of claim 1, wherein said credit parameter value contained in said access response is based on one of: a) time usage; and b) traffic volume usage.

6. (ORIGINAL) The method according to claim 1, wherein said network is a wireless Local Area network (WLAN) and further wherein said client device is a mobile communications device.

7. (CANCELLED)

8. (CANCELLED)

9. (CANCELLED)

10. (CANCELLED)

11. (CANCELLED)

12. (AMENDED) A system comprising:
an access point for communicating with one of a plurality of client devices through a communications channel, said access point providing access to a network based on an authentication of said client device via an authentication server according to an authentication protocol,

wherein said access point is further responsive to an access response from an authentication server authenticating one of said client devices having requested access to said network, which request was forwarded to said authentication

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server via said access point, said access response containing a parameter having a value indicative of the length of available continued access of the client device based on an indicator of remaining user credit, so as to cause said access point to initiate a re-authentication process upon the expiration of a threshold value corresponding to said parameter value, by requiring the client device to re-provide user credentials to permit re-authentication of the client device before granting the client device further access to the network.

13. (AMENDED) The system of claim 12, wherein the network operates using an 802.1 X authentication protocol, and wherein the authentication server is a RADIUS authentication server and further wherein said network is a wireless Local Area Network (WLAN) and said client device is a mobile communications device.

14. (AMENDED) The system of claim 12, wherein said parameter value comprises a session-timeout parameter.

15. (AMENDED) The system of claim 13, wherein said RADIUS authentication server contains memory for storing said indicator of remaining user credit.

16. (AMENDED) The system of claim 12, wherein said parameter value contained in said access response is based on one of: a) time usage; and b) traffic volume usage.

17. (AMENDED) The system of claim 15, wherein in response to a re-authentication request associated with the client device received from the AP, the authentication server retrieves said indicator of remaining user credit and denies re-authentication of said client device when said indicator of remaining user credit drops below a threshold value.

18. (AMENDED) The system of claim 17, wherein the indicator of remaining user credit comprises a credit timer indicative of the remaining credit balance of said user account, said credit timer being decremented according to a temporal access usage to the network by the client device.

19. (AMENDED) The system of claim 17, wherein the authentication server periodically updates the credit timer of said user account in units of: a) time and b) traffic volume.

20. (AMENDED) The method of claim 1, further comprising: calculating, by said authentication server in response to said user credentials, a session-timeout parameter value based on remaining user credit and network charges associated with said client device, said session-timeout parameter value indicative of the length of available continued access to the network;

embedding, by said authentication server, said session-timeout parameter value in said access response message authenticating said associated client device for network access;

activating, by said authentication server, a credit timer having a value indicative of remaining user credit balance associated with said client device, said credit timer decremented according to a temporal access usage; and

receiving by said authentication server said user credentials in response to said re-authorization request for re-authenticating said user access for said associated client device, comparing said credit timer value associated with said client device with a predetermined threshold value, and determining whether said client device is de-authenticated from further access to the network based on said comparison.

21. (ORIGINAL) The method of claim 20, further

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comprising transmitting by said authentication server a de-authentication response message to said AP when said credit timer value is below said predetermined threshold value.

22. (CANCELLED)

23. (CANCELLED)

24. (CANCELLED)

25. (CANCELLED)

26. (CANCELLED)

27. (CANCELLED)

28. (CANCELLED)

29. (CANCELLED)

30. (CANCELLED)

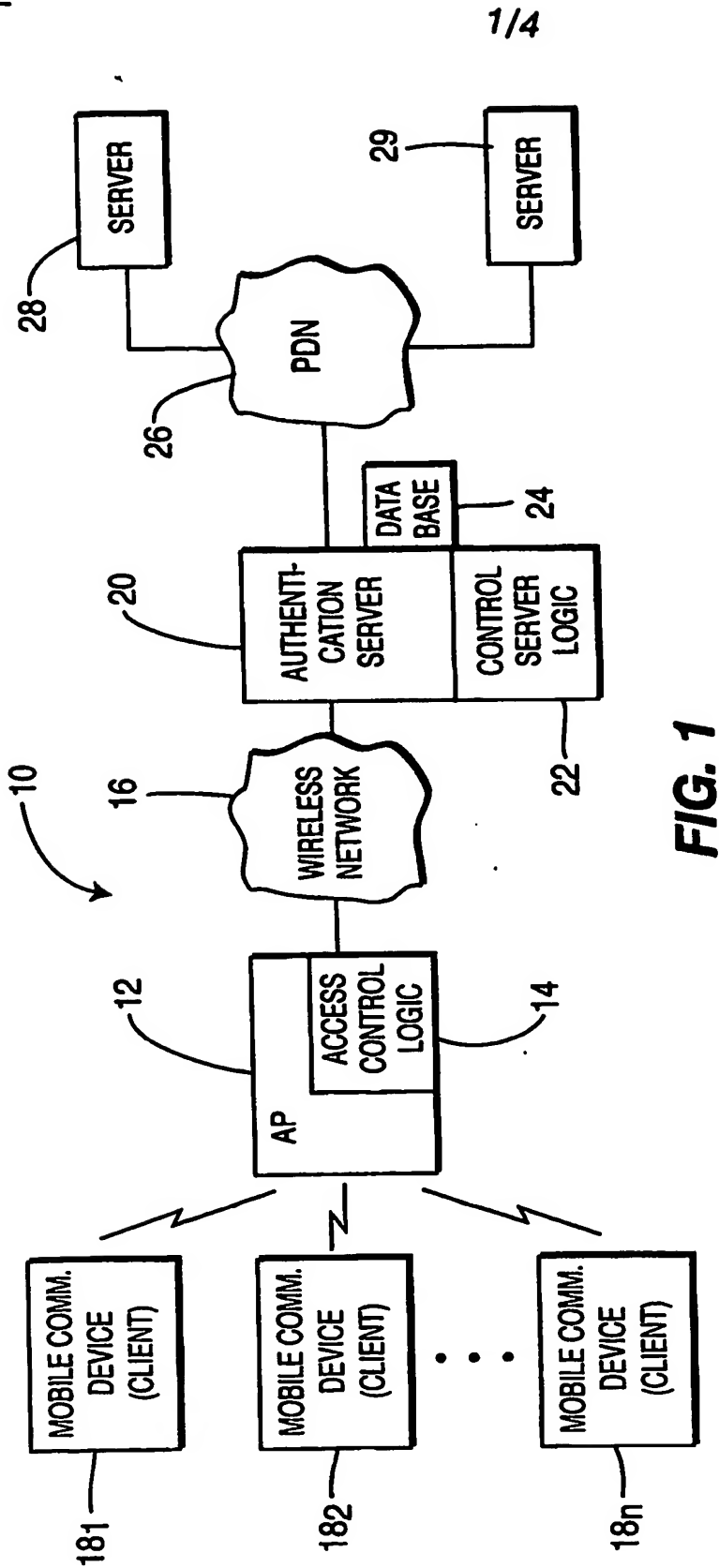


FIG. 1

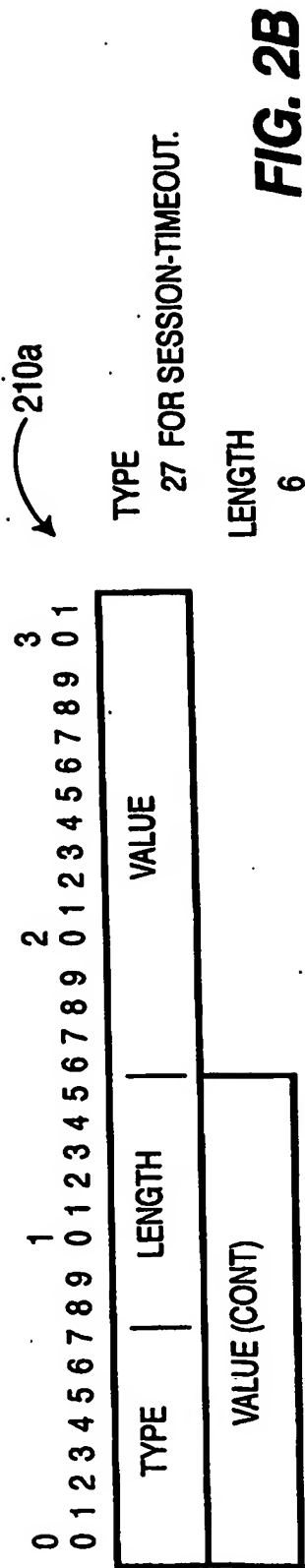


FIG. 2B

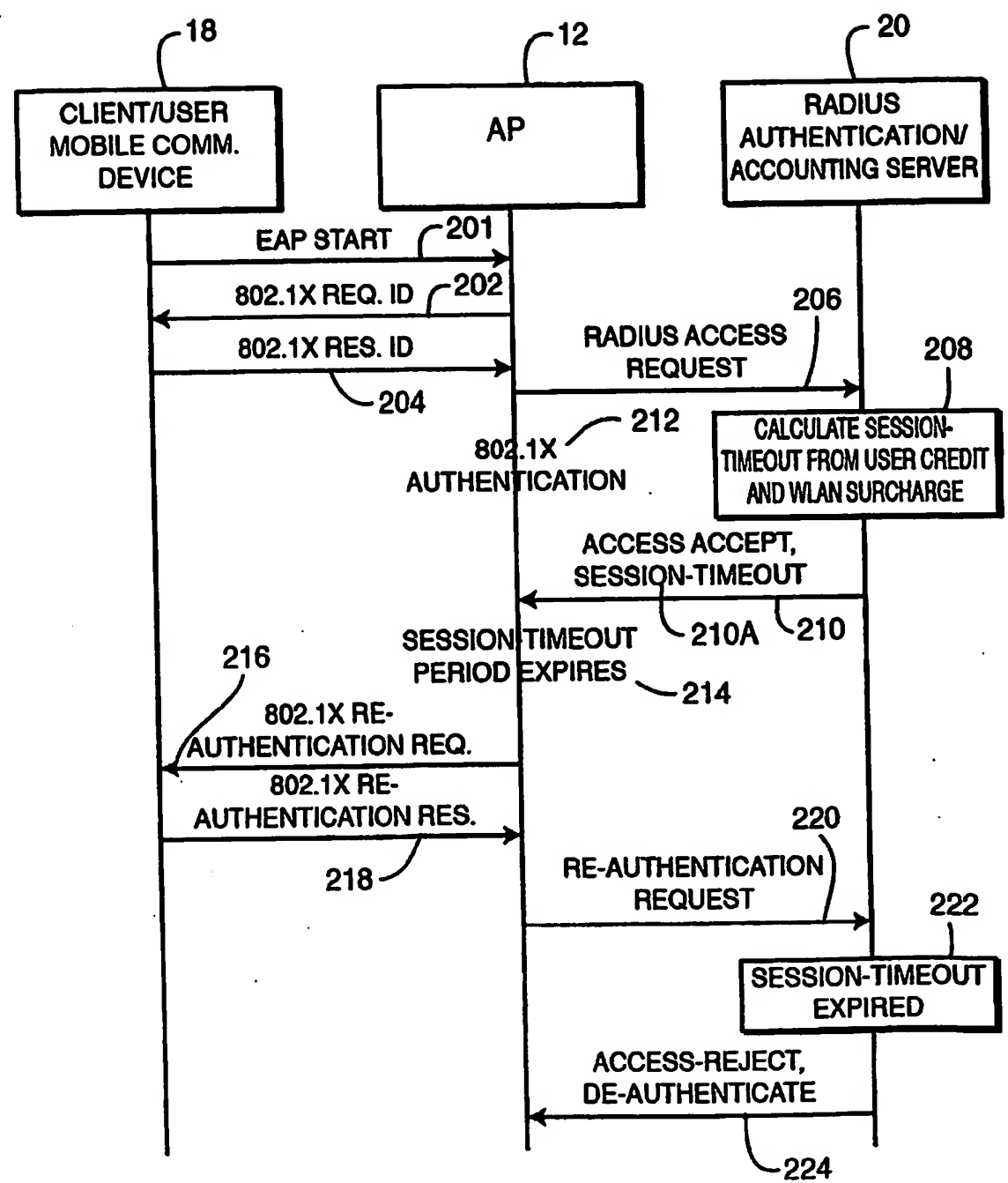
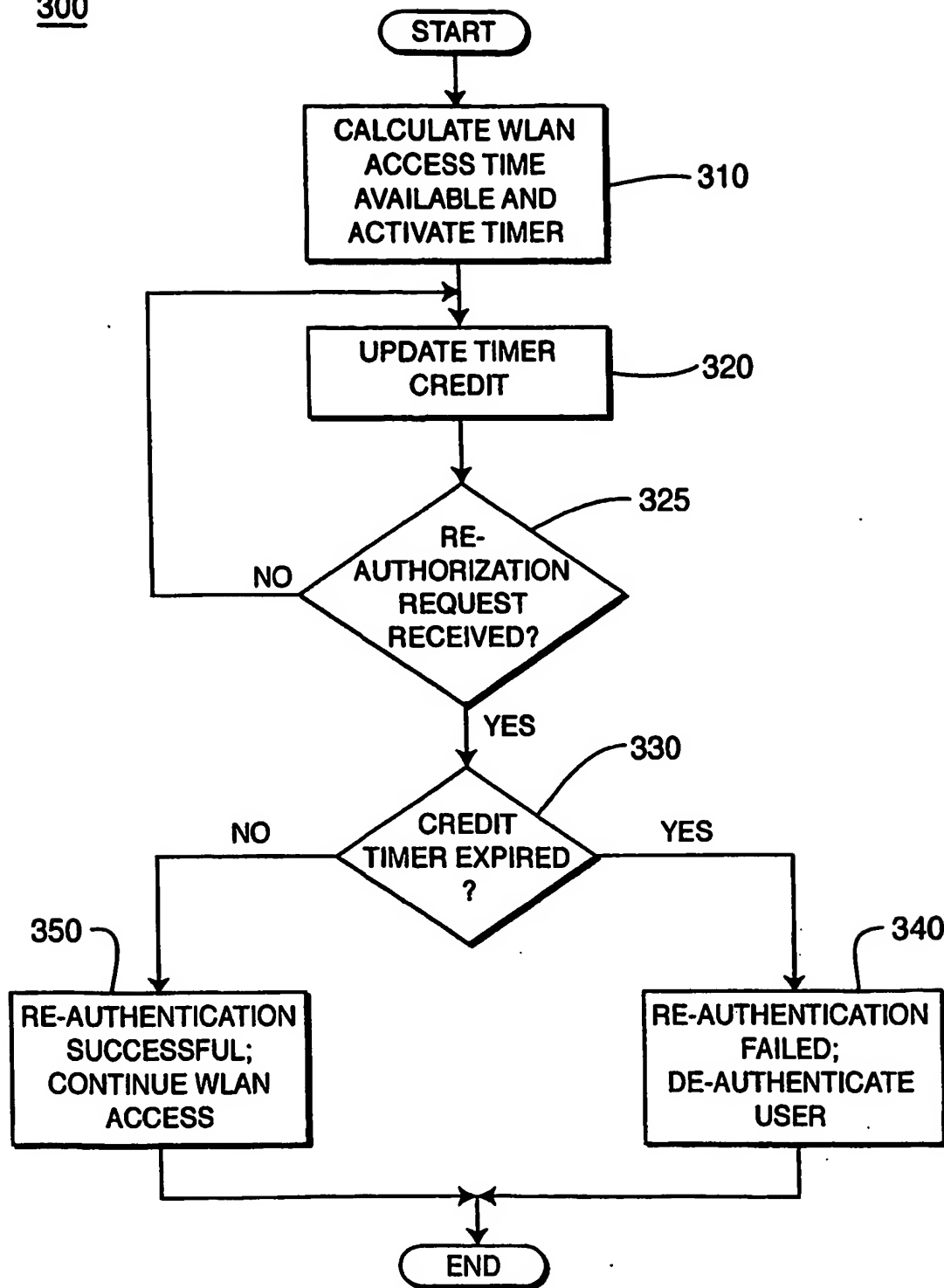


FIG. 2A

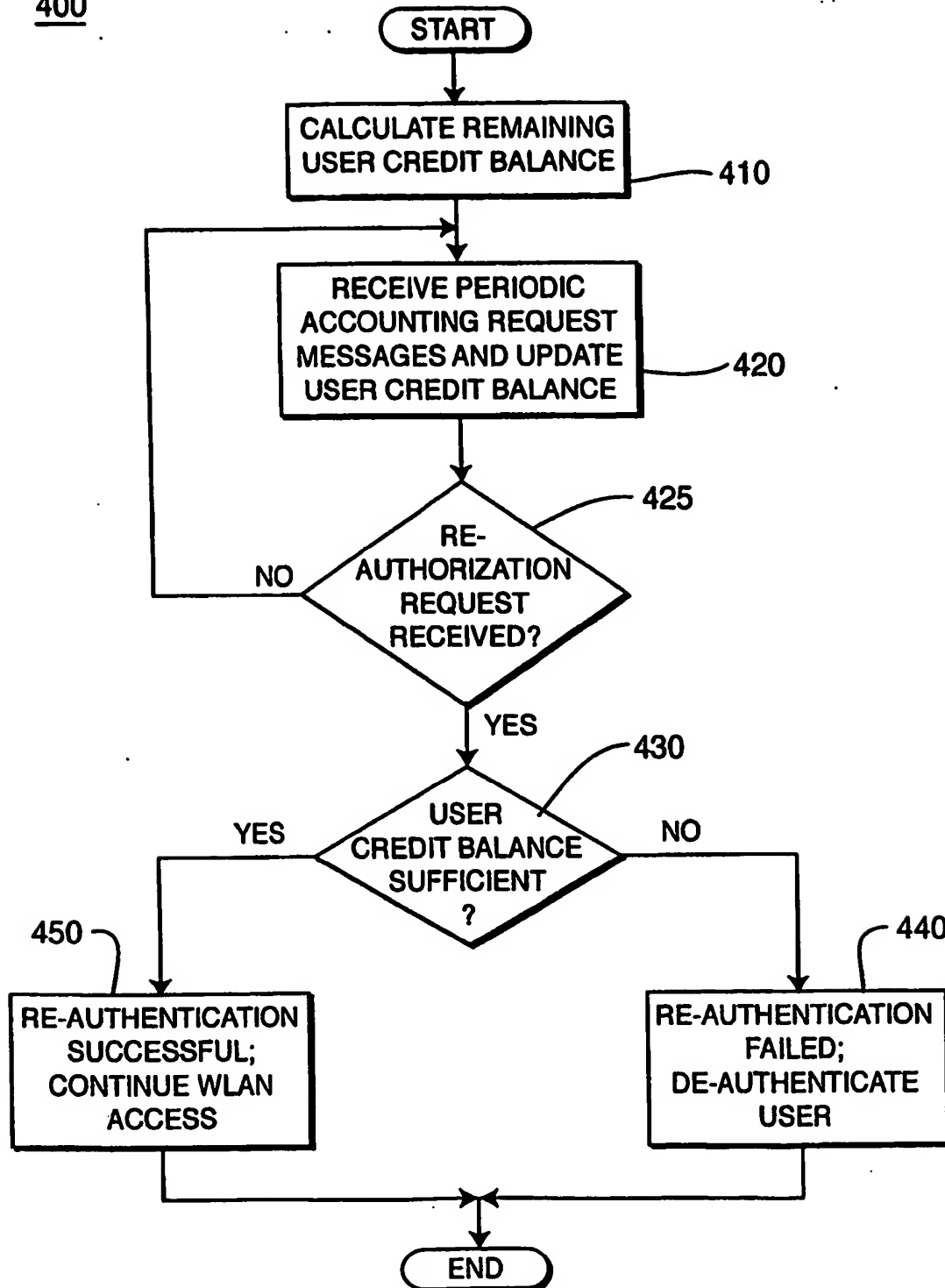
300

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**FIG. 3**

400

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**FIG. 4**